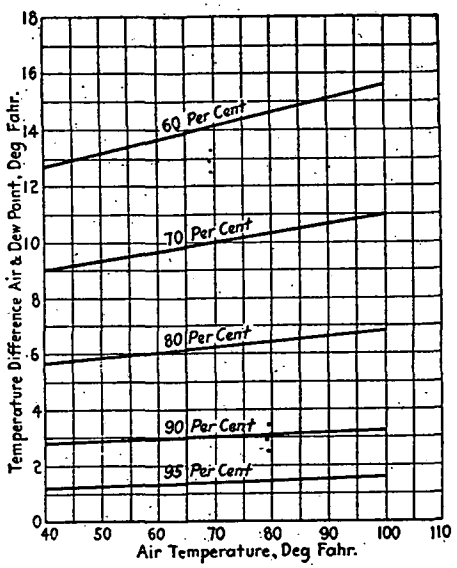


FIG. 2. TEMPERATURE DIFFERENCE BETWEEN AIR AND DEW POINTS AT DIFFERENT RELATIVE HUMIDITIES

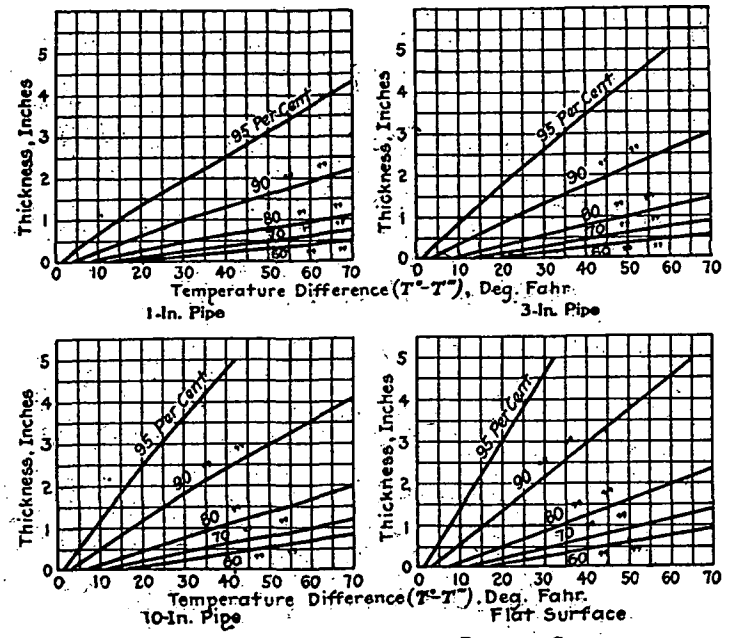
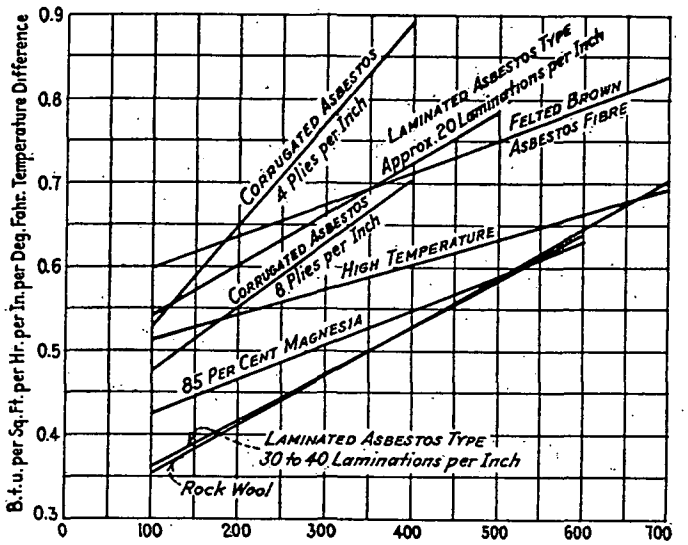


FIG. 3. THICKNESS OF INSULATION TO PREVENT SWEATING

surface whenever its temperature falls to that of the dew point of the surrounding air. Fig. 2 gives the temperature difference between the air and the dew point corresponding to different air temperatures and different relative humidities, as computed from Goodenough's tables.

The temperature of the outer surface of the insulation depends upon the temperature of the air, temperature of brine, thickness of insulation, conductivity of insulation, diameter of insulation surface, nature of



(R. H. Heilman, *Mech. Eng.*, Vol. 46 [1924], p. 593)

FIG. 4. THERMAL CONDUCTIVITY

surface, etc. The conductivity of various coverings in common use are shown in Table 4. A value of 0.3 for k has been used in the computation of the curves shown in Fig. 3. The surface resistance used in calculating these tables has been taken from results obtained on canvas covered surfaces. However, it has been found that the resistance for asphaltic and roofing surfaces is practically the same as for canvas surfaces so that the curves given may be safely used with no alternations for the surfaces commonly used.

To determine the thickness of covering necessary to prevent sweating for coverings having conductivity values differing from the value of 0.3 used in computing the curves increase or decrease the values taken from the curves by the percentages indicated in the last column of Table 4. These percentages will give values approximately correct. In Fig. 3,

T_o = temperature of air on warm side of insulation.
T''' = temperature of the medium on cold side of insulation.